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July 23, 2015

Mr. Martin Powell
On-Scene Coordinator
U.S. EPA Region 9
2445 North Palm Drive
Signal Hill, CA 90755

Subject: Santa Clara Waste Water Treatment Plant ER
Santa Paula, Ventura County, California
Technical Direction Document (TDD) No.: 0002/1302-T2-R9-14-11-0002
Document Control No.: 0031-08-AAEM
Work Order No.: 20409.012.002.0031.00

Dear OSC Powell:

Under TDD No. 0002/1302-T2-R9-14-11-0002, the U.S. Environmental Protection Agency (EPA) tasked the Weston Solutions, Inc. (WESTON®), Superfund Technical Assessment and Response Team (START) to support EPA's Emergency Response (ER) at the Santa Clara Waste Water Treatment Plant in Santa Paula, Ventura County, California (the Site). The ER was initiated to mitigate the potential for imminent and substantial threats to public health or welfare or the environment from a vacuum truck explosion and the resulting fire.

This letter report discusses the Site description and history, ER activities, and provides a summary of the ER. **Attachment A** provides the figures for this letter report. **Attachment B** provides a photographic log of site conditions and ER activities.

SITE DESCRIPTION AND HISTORY

The Site is the Santa Clara Waste Water Company (SCWW) facility located at 815 Mission Rock Road in Santa Paula, California (**Figures 1 and 2 in Attachment A**). The Site's geographic coordinates are 34° 18' 54.00" North latitude and 119° 06' 13.76" West longitude.

On November 18, 2014, at approximately 0330 hours, SCWW personnel were transferring waste materials between totes on site using a vacuum truck. The contents of the truck reacted violently and an explosion occurred inside the tank. A fire ensued, engulfing multiple waste streams at the facility including oxidizers, acids, polymerizing agents, and chlorine tablets. The fire compromised multiple waste containers which released into the secondary containment, forming a watery sludge from the mixed chemicals.

A fine crystalline material formed on the drying surfaces from the chemical mix, which was found to be shock sensitive. The Ventura County Fire Department (VCFD) experienced incidents of sparks and small deflagrations from walking on the crystals. Field screenings of the crystalline material by the VCFD Hazardous Materials (HAZ MAT) Unit indicated that the crystals were a



formation of organic peroxides. VCFD and the Santa Paula Fire Department (SPFD) abandoned engines in the facility due to contamination by the shock sensitive organic peroxide. The Ventura County Sheriff's Department issued a 0.5 mile evacuation order, and a shelter in place order to residents located up to 3 miles downwind.

On November 18, 2014, EPA requested that WESTON START mobilize to the Site to assess the site-related environmental hazards.

EMERGENCY RESPONSE ACTIVITIES

ER activities were conducted from November 18, 2014, through January 9, 2015. **Attachment B** provides a photographic log of site conditions and ER activities. A summary of the major ER activities by week is presented below.

November 18 through November 23, 2014

- START and EPA mobilized to the Site to provide support under the Incident Command (IC) being structured through VCFD.
- The initial fire was extinguished by the evening of November 18, 2014.
- VCFD HAZ MAT made entries to the SCWW facility and observed the formation of shock sensitive crystals. Entries were also made into several of the surrounding businesses and properties for the purpose of screening for and eliminating the acute threat of shock sensitive materials released from the site.
- START conducted bench-top tests of the shock-sensitive material in both solid and liquid states from samples collected by VCFD. The tests indicated a strong oxidizer that is highly flammable in solid form.
- Patriot Environmental Services (Patriot) was contracted by SCWW to act as the primary removal contractor for site cleanup activities. Center for Toxicology and Environmental Health (CTEH) was subcontracted to provide technical support.
- A joint team of representatives from START, EPA, VCFD, Ventura County Agricultural Commission (VCAC), and CTEH collected 19 soil samples from agricultural locations down gradient (west) of the facility and one background sample. Each location was field screened for pH and oxidizers. All 20 samples were submitted by CTEH to a certified laboratory for analysis.
- CTEH prepared an Air Monitoring Plan (AMP) for supporting entry to the Site and future removal operations. The AMP was reviewed and approved by IC and implemented on November 21, 2015. Perimeter air monitoring was implemented by CTEH and no compounds were observed above site-specific action levels.
- Patriot made entry to the Site to begin the decontamination of an SPFD fire truck, Engine 82. The fire engine was decontaminated to the point where rinsate from the hard surfaces



screened below 0.5 parts per million (ppm) on an oxidizer strip. The rig was moved to a support zone for further decontamination.

- VCFD relinquished Incident Command and the transition was made to a Unified Command (UC) which included SCWW, Ventura County Environmental Health (VCEH), and EPA.

November 24 through November 28, 2014

- Patriot submitted a revised Site Health and Safety Plan (HASP) for review and approval by UC. The document was approved and work continued under the revised HASP.
- Patriot created Contamination Reduction Zones (CRZ) for work on the Site. The CRZs were decontaminated and screened for oxidizers prior to their implementation.
- Decontamination of the SPFD Engine 82 continued with the removal of all soft equipment (hoses, headliners, seats). Field screening wipe samples were collected from the engine compartment, air filter, and cab. Additional confirmation wipe samples were collected from the outside of the Engine.
- Laboratory results from the confirmation wipe samples were received by Patriot and reviewed. The sampling results verified the completion of decontamination on Engine 82. The Engine was released from the Site back to SPFD.
- Swipe sampling activities began on the Site in an attempt to “clear” working areas for the absence of oxidizers. Swipe tests included the use of oxidizer paper and pH paper on wetted soils and surfaces to clear sections of the exclusion zone.
- On November 28, 2014, at 0945, a CTEH sampling team consisting of two swipe sample technicians and one air monitoring technician were involved in a flash reactive incident while sampling. One team member, while wearing Level C personal protective equipment (PPE) set off a flash reaction which created a white flame and percussive blast. No team members were injured in the incident, but the PPE of one sample technician was breached by the flame.
- A health and safety stand-down order was issued on the Site by Patriot.

November 29 through December 5, 2014

- The U.S. Coast Guard Pacific Strike Team (USCG PST) deployed two team members at the request of EPA to assist in operational and health and safety oversight.
- Patriot produced a predictive flow map for the Site to mitigate storm water runoff from the Site during a predicted heavy rain storm during this period. Sand bags and containment boom were deployed in potential areas of concern.
- With increased health and safety concerns in mind, Patriot/CTEH proposed a sectional approach for assessment and cleanup activities. The Site was divided into alphabetical



divisions A through F (**Figure 2**). Each division, where appropriate, was broken into numerical sectors to sharpen the focus of field work and facilitate communication of activities.

- Entry teams into dedicated “hot zones” were further required to don Tychem ThermoPro PPE, which provides both chemical and flash resistant protection, along with full-face respirators.
- A Senior Chemist from EPA’s Environmental Response Team (ERT) was brought onto the project to provide advice and guidance to the OSC on the possible neutralization solutions for the oxidizer solids on site. Bench testing by CTEH revealed that a 5% sodium sulfite solution (by weight) was the most effective means of neutralization.
- Neutralization and decontamination work in Sector A1 was completed using the sodium sulfite solution and power washing. Results of a swipe test survey of Sectors E1 and E2 indicated that no physically unstable compounds were present in the area. It was agreed that only power washing would be necessary to clear these Sectors.
- A large storm cell passed through the area on December 2, 2014, which resulted in pooled water on the Site and a release of an estimated 100 gallons of storm water runoff from the facility. Storm water on the Site was collected with vacuum trucks and staged in frac tanks awaiting analysis and disposal.
- CTEH performed a Level B entry into Divisions B, C, and D to collect liquid and solid samples from the pooled material and the vacuum trucks on site. In total, seven samples were collected for hazard categorization (HazCat) and field screening.

December 6 through December 14, 2014

- Patriot completed the neutralization and power washing of Sectors B1 through B4. Swipe sampling confirmed that the areas were free of corrosives and oxidizers.
- Patriot did a gross neutralization and decontamination on the Patriot 120-barrel vacuum truck in the pooled area. The truck was towed from the pool and into Sector B2 for complete decontamination and swipe testing. The vacuum truck was cleared and staged in Sector F2 for storage.
- CTEH conducted bench tests with samples of the pooled material and the proposed solidification material. Powdered rock and Portland cement were mixed with samples at a ratio of 10:1, 5:1, and 1:1. The 10:1 ratio was found to be most effective, adsorbing approximately 40% of its own weight.
- Patriot/CTEH submitted a *Tank and Tote Inventory Sampling and Analysis Plan* to UC for comment. The plan was approved and CTEH began the sampling, HazCat, and inventory of all tanks and totes on site.



- Another large downpour halted operations on the Site on December 12, 2014. Additional berming and storm water management activities were conducted by Patriot. Approximately 60,000 gallons of rainwater were transferred to frac tanks for storage.
- Neutralization with sodium sulfite solution and power washing continued in Divisions C and D.

December 15 through December 21, 2014

- Patriot/CTEH collected 13 samples from various totes and tanks on site for HazCat and four samples for laboratory analysis as described in the *Tank and Tote Inventory Sampling and Analysis Plan*. HazCat results indicated that information about tank and tote contents from the potentially responsible party could be considered reliable and utilized in tank and tote identification.
- Truckloads of solidification material were delivered to the Site and staged in Sector D2, along the southwest boundary of the pooled material. Loads of solidification materials were delivered consistently to the Site throughout the work days.
- Solidification activities began in Sector D2, with an excavator pushing solidification material into the pooled material. The excavator operator controlled the liquid-solid ratio in the cleared area and then stockpiled the solidified waste to the southwest of the pooled material.
- Samples were collected from the sludge accumulated at the bottom of the pooled material in Sector D2. HazCat analysis indicated that the material was reactive and consistent with oxidizing material found on Site.
- The 120-barrel vacuum “source truck” was towed out of the pooled material in Sector D2 and into the staging area of Sector E2. During movement, a small plume of white smoke was observed coming from the rear of the truck. Operations were halted as the smoke source was investigated and found to be an accumulation of solid material in the rear inlet pipes. Air monitoring revealed that the material was releasing chlorine gas at a peak value of 4.2 ppm.
- The EPA Criminal Investigation Division (CID) arrived on site on December 20, 2014, to sample the solid material discovered in the rear inlet of the “source truck” in support of the Ventura County District Attorney’s Office.
- Samples of solidified waste were collected by CTEH and submitted to a laboratory for analysis and profiling for disposal.
- Patriot prepped the Site for the extended holiday break, including inspections of the fences and entrances to the Site.



December 22 through December 28, 2014

- Site activities were suspended during this period. Security was maintained on site throughout the extent of this break.

December 29, 2014 through January 2, 2015

- Patriot/CTEH collected samples from the SCWW 70-barrel vacuum truck and the Patriot 70-barrel vacuum truck which were abandoned in Sectors E2 and B2. HazCat analysis on the samples indicated that the material was consistent with sewage waste stored on site. The remaining materials from both 70-barrel vacuum trucks were collected and consolidated with other stored sewage wastes on site.
- The SCWW 70-barrel vacuum truck and the Patriot 70-barrel vacuum truck were both moved from the pooled material area and into Sector F2 for further decontamination and swipe sampling.
- Analytical results from the solidified waste samples were received and reviewed by Patriot/CTEH and VCEH. Both parties agreed that the solidified waste material met the criteria to be disposed of as “non-hazardous” material.
- On December 31, 2014, transport trucks with tarp covers began transporting stockpiled solidified waste to Chiquita Canyon Landfill in Castaic, CA.
- Patriot/CTEH submitted a plan to scale-back community air monitoring based on changing operations and past results. Perimeter and site air monitoring were proposed to continue as normal. UC reviewed and approved the plan.
- Solidification of waste from the pooled area and transport to Chiquita Canyon Landfill continued in Sectors C2, C3, and D2. As each sector was cleared, the area was neutralized with sodium sulfite solution and then power washed clean. The area was finally swipe tested for oxidizers and pH.

January 3 through January 9, 2015

- Solidification of waste from the pooled area and transport to Chiquita Canyon Landfill continued in Sectors D4 and D5.
- The chemistry storage building in Sector C3, which burned during the initial fire, was removed with the excavator and crushed into the solidified waste stockpile.
- Containerized wastes and products in totes and small containers were segregated based on hazard class in a bermed and plastic-lined storage area.
- Patriot/CTEH completed the labeling of all tanks and totes on site. A map of all labeled containers and their locations was provided to UC.
- Eight samples were collected by CTEH from frac tanks of storm water staged on site. HazCat results indicated that the water was negative for oxidizers and of neutral pH.



- A fence contractor was utilized by SCWW to enclose all open portions of the Site, repair holes in the original fencing, and provide locks for the entrances and exits.
- CTEH collected soil samples from five biased locations at the Site. One sample each was collected from Sectors C3, E2, F1, and two from Sector B4. Samples were submitted under chain-of-custody for laboratory analysis for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH), metals, anions, chlorine, and pH. Each sample was also field screened for oxidizers.
- VCFD took possession of Engine 26. The Engine was charged, rinsed one additional time, and then towed off site by VCFD representatives.
- All remaining solidified wastes were removed from the Site and transported for disposal at Chiquita Canyon Landfill by January 9, 2015.
- A final site walkthrough was conducted by representatives for SCWW, the SCWW consultants, Patriot and CTEH, EPA and START.
- START, EPA, VCEH, and UC demobilized from the Site on January 9, 2015.

FUTURE ACTIVITIES

No future EPA activities are anticipated for the Site. Remedial oversight has been remanded to the State of California Water Quality Control Board to address any possible long-term environmental impacts from the site.

SUMMARY

Under direction of the EPA OSC, START personnel conducted oversight and documentation of the response to a vacuum truck explosion including the resulting fire and emergency removal activities at the Santa Clara Waste Water Treatment Plant in Santa Paula, California. SCWW contracted Patriot and CTEH to conduct emergency assessment and removal activities at the Site. Patriot/CTEH solidified all pooled wastes from the Site and transported them for disposal. All affected divisions and sectors on the Site were neutralized with sodium sulfite solution and then power washed clean. All power washed areas were swipe tested for oxidizers and pH prior to considering them "cleared." SPFD Engine 82 and VCFD Engine 26 were both neutralized and decontaminated prior to being released to their respective fire departments. All tanks and totes on site were inventoried and labeled. Totes and small containers were staged on plastic in a bermed area by hazard category, and the Site fences were repaired to limit unauthorized access. On January 9, 2015, ER activities were completed and EPA and START demobilized from the Site.

If you have any questions or comments regarding this report, please contact WESTON START at (562) 270-3312.



Mr. Martin Powell
EPA

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Santa Clara Waste Water Treatment Plant ER
July 23, 2015

Very truly yours,

WESTON SOLUTIONS, INC.

A handwritten signature in black ink, appearing to read "Ben Castellana", is written over a light blue horizontal line.

Ben Castellana
START Project Manager

Attachments:

A – Figures

B – Photographic Log

cc: START

DCN

File

ATTACHMENT A
FIGURES



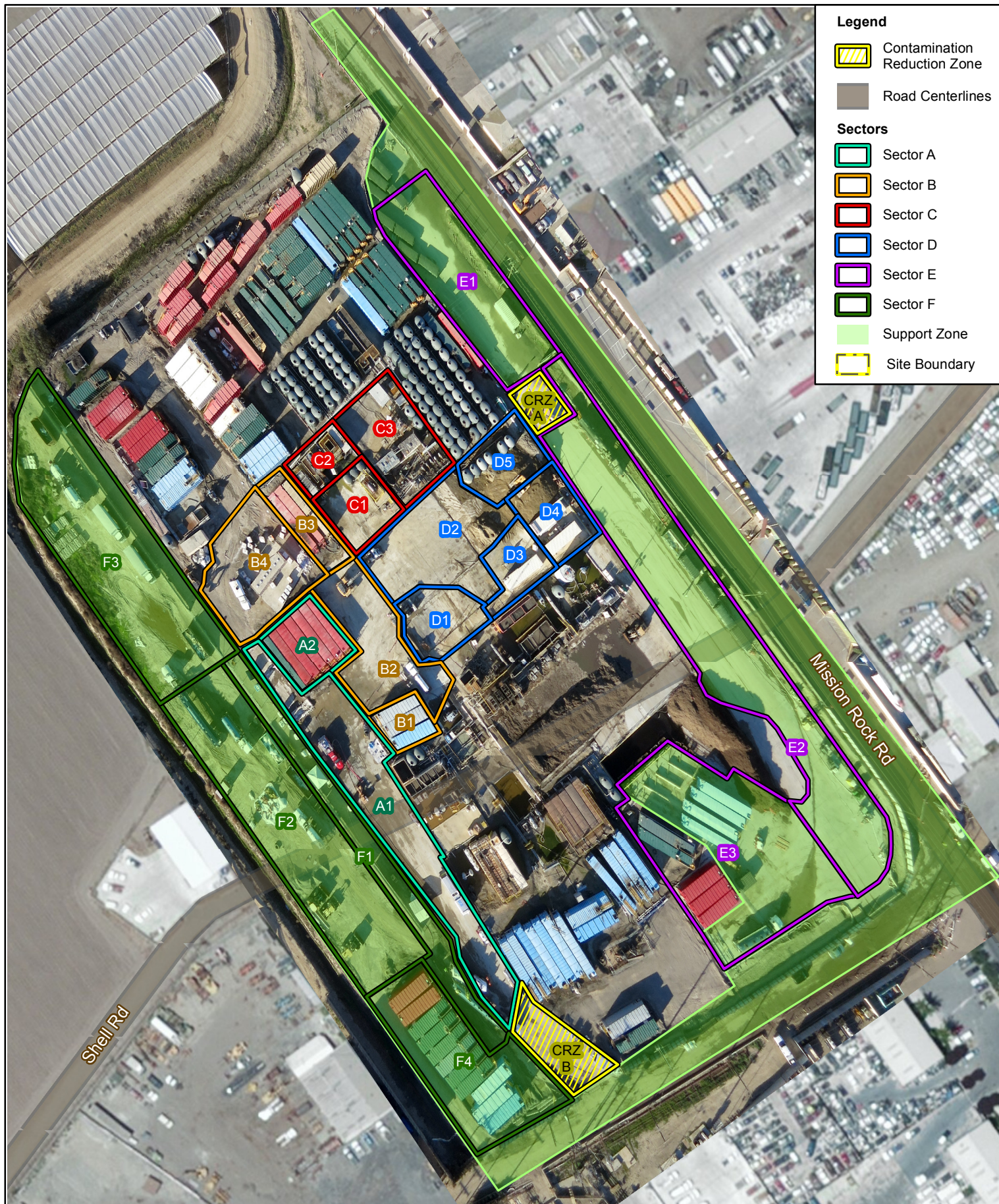
PREPARED BY:
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PREPARED FOR:
EPA Region 9
Pacific
Southwest



FIGURE 1
SITE LOCATION MAP
Santa Clara ER
Santa Paula, Ventura County, CA



<p>Scale in Feet</p>	<p>PREPARED BY: Region 9, START Weston Solutions, Inc. 1340 Treat Blvd, Ste 210 Walnut Creek, CA 94597</p>	<p>PREPARED FOR: EPA Region 9 Pacific Southwest</p>	<p>FIGURE 2 SITE FEATURES MAP Santa Clara ER Santa Paula, Ventura County, CA</p>
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ATTACHMENT B
PHOTOGRAPHIC LOG



Site: Santa Clara Waste Water Treatment Site

Photograph No.: 1

Direction: East

Subject: A flyover of the Site showing site conditions the day after the fire.

Date: 11/19/14

Photographer: VCFD



Site: Santa Clara Waste Water Treatment Site

Photograph No.: 2

Direction: West

Subject: Patriot crews decontaminate employee vehicles on Site.

Date: 11/24/14

Photographer: Jonathan Colomb



Site: Santa Clara Waste Water Treatment Site

Photograph No.:3

Direction: West

Subject: Patriot/CTEH screen Engine 82 following removal of all soft materials.

Date: 11/29/14

Photographer: Patriot Environmental



Site: Santa Clara Waste Water Treatment Site

Photograph No.:4

Direction: West

Subject: Patriot/CTEH screen soft materials after removal from Engine 82.

Date: 11/30/14

Photographer: Patriot Environmental



Site: Santa Clara Waste Water Treatment Site

Photograph No.:5

Direction: North

Subject: Patriot/CTEH sample waste from the pooled material.

Date: 12/03/14

Photographer: Jonathan Colomb



Site: Santa Clara Waste Water Treatment Site

Photograph No.:6

Direction: West

Subject: Patriot/CTEH sample waste from the pooled material.

Date: 12/04/14

Photographer: Jonathan Colomb



Site: Santa Clara Waste Water Treatment Site

Photograph No.:7

Direction: Southeast

Subject: Patriot begins solidification of pooled material.

Date: 12/15/14

Photographer: Patriot Environmental



Site: Santa Clara Waste Water Treatment Site

Photograph No.:8

Direction: Northeast

Subject: Patriot/CTEH conduct air monitoring on inlet pipes from “source truck”.

Date: 12/19/14

Photographer: Jonathan Colomb



Site: Santa Clara Waste Water Treatment Site

Photograph No.:9

Direction: East

Subject: CTEH collects samples from totes on site.

Date: 12/20/14

Photographer: Patriot Environmental



Site: Santa Clara Waste Water Treatment Site

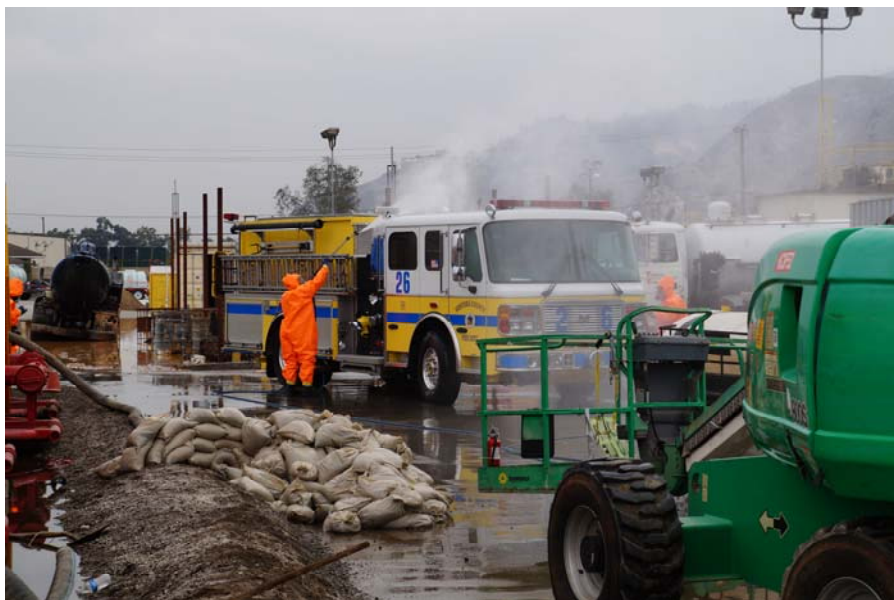
Photograph No.:10

Direction: Southeast

Subject: Solidification materials staged near pool.

Date: 12/21/14

Photographer: Jonathan Colomb



Site: Santa Clara Waste Water Treatment Site

Photograph No.:11

Direction: Southeast

Subject: Removal and gross decon of Engine 26 from pooled area.

Date: 1/03/15

Photographer: Jonathan Colomb



Site: Santa Clara Waste Water Treatment Site

Photograph No.:12

Direction: Northwest

Subject: Solidified waste being loaded into trucks for transportation and disposal.

Date: 1/05/15

Photographer: Jonathan Colomb



Site: Santa Clara Waste Water Treatment Site

Photograph No.:13

Direction: Southeast

Subject: Pressure washing in Sector D2 following removal of solidified waste.

Date: 1/05/15

Photographer: Jonathan Colomb



Site: Santa Clara Waste Water Treatment Site

Photograph No.:14

Direction: Southeast

Subject: Division D on final walkthrough of Site.

Date: 1/09/15

Photographer: Jonathan Colomb